[54] **OPHTHALMIC LENSES WITH PROGRESSIVELY VARYING FOCAL LENGTH**

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Related U.S. Application Data

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.** **G02c 7/06**
[58] **Field of Search** 351/169, 177

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[57] **ABSTRACT**

An improved ophthalmic lens with varying focal length, said lens being made of a refractive material and having two refractive surfaces one of which is divided into first, second and third substantially horizontally extending zones intended respectively for distant vision, intermediate distance vision and near vision, said one surface having an oblique meridian passing through the optical center of the lens and traversing said zones, said meridian being inclined downwardly from the temporal side of the lens toward the nasal side of the lens along an angled path traced by the line of sight of a wearer in going from distant vision to near vision, said first zone occupying approximately the upper half of said one surface and having a substantially constant curvature providing a substantially constant focal length for distant vision, said third zone occupying a lower portion of said one surface and having a substantially constant curvature providing a substantially constant focal length for near vision, and said second zone lying between said first and third zones and having a varying curvature providing a varying focal length, the curvature of said second zone at successive points along said meridian varying progressively from the substantially constant curvature of said first zone to the substantially constant curvature of said third zone, said second zone having at each point thereof a minimum curvature $C_{min.}$ and a maximum curvature $C_{max.}$ except along said meridian where the minimum and maximum curvatures at each point thereof are of equal value, said second zone further having on one side of said meridian a first line which is a loci of points where $C_{min.}$ and $C_{max.}$ satisfy the following relation: $[C_{max.}-C_{min.}]= N$, where N has a given value which satisfies the relation: $N \leqslant 1/(n-1)$, n being the refractive index of said refractive material, and on the other side of said meridian a second line which is a loci of points where $C_{min.}$ and $C_{max.}$ satisfy the above-mentioned relation, the improvement consisting in that, when the lens is in use, any horizontal line in said second zone intersects successively said first line, said meridian and said second line at respective points of intersection, the point of intersection of said horizontal line with said meridian being substantially equally spaced from the points of intersection of said horizontal line with said first and second lines.

2 Claims, 11 Drawing Figures